DOCUMENT RESUME

ED 327 180 IR 014 810

AUTHOR Kirkup, Gill

TITLE Considering the Effect on Women Students of an Increased Use of Microcomputers in Distance Education. CITE Report No. 28.

INSTITUTION Open Univ., Walton, Bletchley, Bucks (England). Inst. of Educational Technology.

PUB DATE Aug 88

NOTE 13p.; Paper Presented at the International Council for Distance Education World Conference (14th, Oslo, Norway, August 9-16, 1988).

PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS College Students; *Computer Assisted Instruction; *Distance Education; *Equal Education; *Females; Foreign Countries; Higher Education; *Microcomputers; Open Universities; School Surveys; *Sex Differences

IDENTIFIERS *Open University (Great Britain)

ABSTRACT

In the past, computing facilities at the Open University in the United Kingdom have been provided through terminals and modems in local study centers. A new policy to implement home computer use will rely on student owned microcomputers. While this policy reflects a commitment to increasing the use of computers as distance education aids, it may have a deleterious effect on the university's female student population. Research shows that Open University female students are less likely to have access to a computer than male students. Also, women are less likely to register for courses that contain a compulsory computing component. Such inequality in the face of commitment to a sophisticated new technology may have serious ramifications on the success rates of women students. (7 references) (DB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

BEST COPY AVAILABLE

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

E.S. Henderson

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Considering the effect on women students of an increased use of microcomputers in distance education

Gill Kirkup

Paper prepared for the International Council for Distance Education 14th World Conference
August 1988.

The Open University UK has always had courses, mainly in maths and sciences, where students were obliged to use a computer for assessed course work. This computing facility has been provided, in the past, by the OU through terminals and modems in local study centres, where students could dial up the University's mainframe computer at the University's expense. This system has always been of limited use due to various practical problems (C.A.L. reports O.U). The University is now implementing a home computer policy which will rely on student owned microcomputers and reflects a commitment to increasing the use of computers as distance teaching devices across many areas of the university. Unless this new medium is accessible to all potential students and staff, it will disadvantage and discourage some. In this paper I am particularly concerned about the effect it might have on women. I will summarise what we know about women's and men's differential access to, and interest in computers: in education in general and the OU in particular.

For the first time in developed countries, we are beginning to use a medium in distance education which is unequally accessible to both sexes. Why this might be so and what kind of initiatives might be useful to counter this inequality will be the subject of a future paper. This paper simply sounds an alert based on the results of an expanding field of research.

New policy in the Open University

At present there are eight courses in the undergraduate programme that have a significant computing component, three additional ones will be presented in 1988, and in 1989 the technology foundation course will use micro-computers as a main teaching medium.

In the past all computing work has been done via terminals, or if stand alone machines have been used they have been lent to students. The exception is a course in educational computing which expected that the student would be a teacher with access to a particular machine popular with schools. Many other courses use computers during their residential summer school, but this is then in a more traditional classroom/lab situation. The University's new home computing policy will shift the burden of provision onto the student, who will be expected to ensure his/her own access to equipment.

The University has organised a system so that students can either buy, at a discount, or rent a machine. Students will be able to buy a machine which meets the University's specification, (basically an IBM compatible plus a printer and a mouse) at a discounted price which should not exceed £550 in 1987/88.

The Department of Trade and Industry (D.T.I.) and the Department of Education and Science (D.E.S) have provided funds for the acquisition of a stock of suitable machines for rental by students who do not wish to buy. The cost of rental in 1988 will be about £150. Students who already own or have suitable access to a machine which meets the required specification will also be able to use them.

For the first three years, 1988-1990, all courses in the undergraduate programme included in the new policy will be subject to a fee reduction, financially supported by the DES. In 1988 this will be £55 for a full-credit course and £28 for a half-credit. This will reduce to £35 and £18 in 1990 and

the scheme then ends. A back-up of 100 University owned machines will be installed, mainly in study centres. The fee reduction policy is to help students who would find the initial outlay on equipment prohibitive, and it will be phased out on the grounds that by 1990 equipment will be so cheap and widely distributed that students are likely to have access for purposes other than the OU, and by then students can be expected to carry the full cost. Written into this policy is no acknowledgement that students will find it differentially easy or difficult to get access, or that some students don't like micro-computers.

Access to Micro-Computers in the OU

In 1984 there was a large scale survey of student access to and use of media. Questions were included about micro-computers but they did not stipulate any particular model or type, consequently a range of equipment, some useless for OU purposes, was covered by the same term 'microcomputer'. This survey showed that there were large differences in amount of access among different occupational groups and consistently large differences between male and female students in the same occupational groups (See Fig 1)

In every occupational group there was a difference between the percentage of men who had access and women in that group. In only one category: qualified scientist and engineers did women have more access than men, and the number of women in this category was extremely low. Although the differential access has caused some concern within the University the overall figures produced an optimistic response. It was felt that if such a large proportion of our students, roughly 50%, had access to a micro-computer in 1984, access was likely to increase and soon we could presume access amongst the majority of our students.

Figure 1

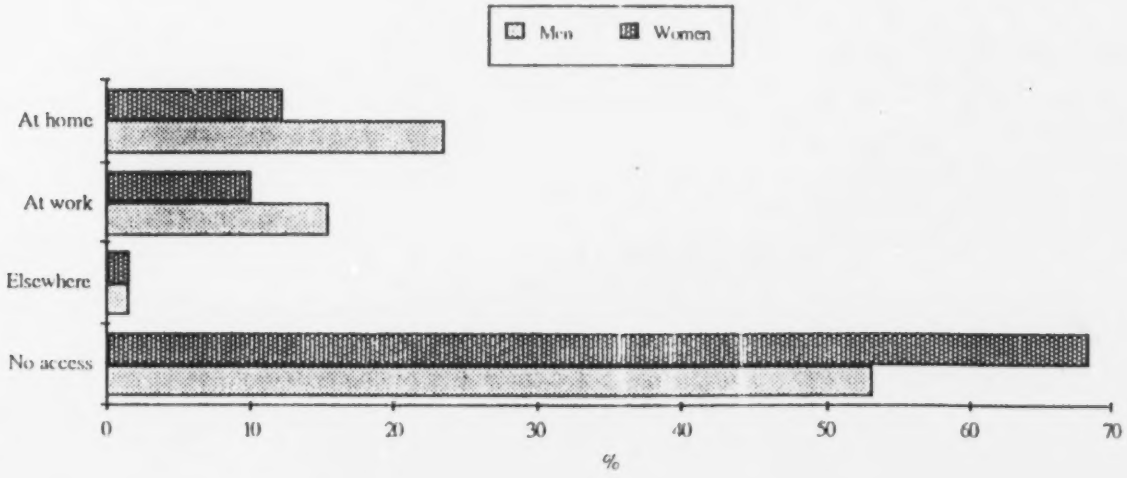
ANY ACCESS TO A MICRO BY SEX AND OCCUPATION

Occupational category	Female % access	Male % access	Difference F - M.
Housewives	44.0	---	---
Admin & managerial	43.9	56.6	-12.7
Primary Teachers	52.2	71.3	-19.1
Secondary Teachers	61.0	70.8	-9.3
Higher Education Teachers	61.1	82.8	-21.7
Other Teachers	29.2	53.9	-24.7
Medical	34.5	37.3	-2.8
Social Services	28.2	46.0	-17.8
Other Professions	26.6	49.5	-22.9
Qual SC + Eng.	72.7	68.5	+4.2
Tech Person	57.4	68.4	-11.0
Clerical & Office	28.1	39.9	-11.8
Sales & Service	34.2	47.O	-12.8
Retired	11.4	34.1	-22.7
Total	42.2	59.3	-17.1

From the A.A.V. media survey 1984 (Grundi

However, a survey done in 1986, using the OU's new specification for the category 'microcomputer' produced figures that suggested that many fewer students had useful access than was suggested by the 1984 survey. Less than 50% of male students and just over 30% of female students. The gap in access between men and women remains almost the same in both surveys. There has been no decrease with time.

Figure 2. Access to a microcomputer - by sex.



Source: Kirkwood, 1987 Findings from the Costs/Access Survey 1986, Report No. 7

The only other teaching medium used by the OU where there is any differential access by gender is to videos, 64.3% of male students report access at home but only 54.5% of women students. This suggests that a gender gap exists with respect to newer forms of media.

Computing Courses in the OU

Figure 3.

PERCENTAGE OF STUDENTS WHO ARE WOMEN ON COURSES WITH A COMPUTING ELEMENT (1986)

		Undergraduate Students	Associate * Students
M253	Computing and Computers	20	30
M352	Computer Based Info Systems	18	27
M353	Programming Languages	17	--
	MATHS TOTAL	25	
TM222	The Digital Computer	13	20
	TECH TOTAL	15	
D309	Cognitive Psychology	56	--
D307	Social Psychology	64	43
	SOC SC TOTAL	55	

**(Associate students are not registered for the undergraduate programme and tend to be people already well qualified who are doing individual courses for professional development. Numbers are quite small relative to the undergraduate numbers.)*

Women students are less likely than men to register for courses which contain a compulsory computing component, even when the computing facility is provided via a local terminal link to a mainframe or in the form of a University machine on loan. Figure 3 lists the 1986 courses that have a significant computing element. For the maths and technology courses fewer women are choosing to study computing courses as undergraduates than the total proportion of women in each faculty. The psychology courses are an interesting exception. These courses are compulsory for students wanting recognition for their degree from the British Psychological Association, and shows the interest women students have in pursuing careers in psychology rather than an interest in computers. Although women are less likely to register for computing courses than men, once they are on them they are more likely to be successful and gain a credit.

It appears then that in the OU women students are less likely to have access to a computer of any sort than a male student. They are less likely than male students to choose a course with a significant computer element, even when the facilities are provided. But are OU students special? What is the situation elsewhere in the UK?

Microcomputers and the gender gap beyond the OU

It is a mistake to see micro-computers as devices which belong to a whole family like a television. UK surveys (James 1986) suggest that most computers are bought for adult males or teenage boys. Forty five percent of 11-14 year olds had a computer at home and these were concentrated in households with male children over 5 years old.

The main uses of home computers are for work related activities for men and games for men and boys. Culley (1986) in a large scale survey of English

school students found that computers were more likely to have been bought for boys than girls, and even when the children reported the machine as being bought for the family it was more likely to be used by boys and fathers - almost exclusively for games playing. 85% of boys with a microcomputer reported it as being bought for them or another male, none that it was for their mother or sister. Of the girls with a computer at home, only 14% reported that it was bought for them.

Gerver (1986) writing about adult students summarises a variety of research which supports this. Unfortunately, the situation does not seem to have been addressed by formal education, and in schools the 'gender gap' in computing seems to be widening. Fewer girls are taking computer science courses than did so in the past. Between 1981 and 1986 the number of women applying to University to do computer science in the UK dropped by half, from 1287 in 1981 to 534 in 1986 (New Scientist 87).

At school in informal computer clubs girls form a very small proportion of regular attenders: 10% (Culley 1986). This has also been true of the Open University Computer Society which in 1986 only had 9.7% of its members women.

Classroom research such as Culley's shows that girls are being taught in ways they feel make using the computer inaccessible to them, and the attitudes of male staff and male students reinforces the feeling they have that involvement with micro-computers is for men and boys. By the time they reach higher education, even those who choose to study technical subjects are less likely to have computer experience than their male fellow students

The worrying thing is that we can now view in the UK a five year period of computer use and there is no indication that the initial 'gender gap' has decreased.

The Implications for Distance Education

In the OU we are about to increase our use of a new technology which offers a promise of providing more sophisticated forms of student controlled, interactive learning. But that promise may be for men mainly. The OU prides itself on having roughly 45% of its undergraduates women, and on the high success rates of women students. It is already too late for this institution to question whether we should be committed to a technology which may be in the process of becoming even more masculine. We now have to design remedial initiatives. But perhaps other distance education institutions who might not have gone so far down the road have time to reflect.

References

Computer Assisted Learning (CAL) Research Group Reports. Especially numbers 1, 4, 5, 6, 7, 15 and 20.

Carrick James — Market Research Survey, Nov. 1985. Quoted in James Letter to the Guardian, May 22nd 1986

Culley Lorraine, — Gender Differences and Computing in Secondary Schools. Department of Education, Loughborough University of Technology, Leics., UK 1986.

Gerver Elizabeth, — Humanising Technology Computers in Community Use and Adult Education. Plenum Press 1986

Kirkwood Adrian, — Access to Video Equipment for Study Purposes - Undergraduate Students in 1986 (unpublished) Report No. 5 from Student Research Centre, Institute of Educational Technology, The Open University, Walton Hall, Milton Keynes, MK7 6AA.

Kirkwood Adrian, — Access to Microcomputing Equipment for Study Purposes - Undergraduate Students in 1986 (unpublished) Report No. 7 from Student Research Centre, Institute of Educational Technology, The Open University, Walton Hall, Milton Keynes, MK7 6AA.

New Scientist — Women Turn their backs on computing 19.2.87

CENTRE FOR INFORMATION TECHNLOGY IN EDUCATION

List of CITE Reports

These reports may be obtained from:

Hansa Solanki, Institute of Educational Technology, The Open University, Walton Hall, MILTON KEYNES, MK7 6AA, England.

Report No.	Title and Author
1	A.T. Vincent, (1985) Computing and the Blind.
2	A. Jones, G. Kirkup, J. Morrison (1985) A Trial of Home Based Computer Terminals.
3	Gill Kirkup, (1985) The Present and Potential Use of Ceefax in the Open University.
4	Mark Elsom-Cook, (1986) Artificial Intelligence and Computer Assisted Instruction.
5	Mark Elsom-Cook, (1986) A Pascal program checker.
6	Simon Holland, (1986) How computers are used in the teaching of music and speculations about how Artificial Intelligence could be applied to radically improve the learning of composition skills.
7	Simon Holland, (1986) Design consideration for a human-computer interface using 12-tone three-dimensional harmony space to aid novices to learn aspects of harmony and composition.
8	Alison Petrie-Brown, (1987) The Influence of Context and Coherence as a Foundation for Dialogue Research.
9	Eileen Scanlon, Randall B. Smith (1987) A Rational Reconstruction of a Bubble Chamber Simulation Using The Alternate Reality Kit.
10	Mark Elsom-Cook, (1987) Intelligent Computer-Aided Instruction research at the Open University.
11	Mark Elsom-Cook, (1987) Towards a framework for human-computer discourse.
12	Mark Elsom-Cook, (1987) MATILDA AND IMPART: Lisp tools.
13	Mark Elsom-Cook, (1987) Guided discovery tutoring and bounded user modelling in Intelligent Computer Aided Instruction ed. J. Self, Chapman-Hall 1987.
14	A.M. Petrie-Brown and M.T. Elsom-Cook, (1987) An Examination of an AI model of indirect speech acts.
15	A. Edwards, (1987) Integrating Synthetic Speech With Other Auditory Cues In Graphical Computer Programs For Blind Users.
16	S. Holland, (June 1987) A knowledge-based tutor for music composition.

17 S. Holland, (June 1987) New Cognitive Theories of Harmony Applied To Direct Manipulation Tools for Novices.

18 M. Baker. (July 1987) Intelligent Computer-Aided Instruction and Musical Performance Skills.

19 M. Baker, (August 1987) Proposed Research Directions for Intelligent Computer-aided Instruction in Musical Performance Skills.

20 A D N Edwards, (August 1987), Adapting interfaces for visually disabled users.

21 M Elsom-Cook, (September 1987), Acquisition of computing skills.

22 M. Baker, (September 1987), Computational Analysis of musical grouping structures.

23 M Baker, (June 1987), Automated Analysis of Musical Grouping Structures as a Basis for a Guided Discovery Environment for Interpretation of Music.

24 D Laurillard, (October 1987), The different forms of learning in psychology and education.

25 A.D.N. Edwards, (November 1987) Modelling blind users" interactions with auditory computer interface.

26 P. Fung, (November 1987) Novice Prolog Programmers.

27 P. Fung, B. DuBoulay & M. Elsom-Cook, (November 1987), An initial taxonomy of novices' misconceptions of the Prolog interpreter.

28 G. Kirkup, (November 1987), Considering the effect on women students of an increased use of microcomputers in distance education.